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INTERNATIONAL PRELIMINARY EXAMINATION REPORT (PCT Article 36 and Rule 70)



Applicant's or agent's file reference LU6083	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/EP 03/14650	International filing date (day/month/year) 19.12.2003	Priority date (day/month/year) 20.12.2002
International Patent Classification (IPC) or both national classification and IPC C08L23/10		
Applicant BASELL POLYOLEFINE ITALIA S.P.A		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 6 sheets, including this cover sheet.

☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

 These annexes consist of a total of 2 sheets.

3. This report contains indications relating to the following items:
 - I ☒ Basis of the opinion
 - II ☐ Priority
 - III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
 - IV ☐ Lack of unity of invention
 - V ☒ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
 - VI ☐ Certain documents cited
 - VII ☐ Certain defects in the international application
 - VIII ☐ Certain observations on the international application

Date of submission of the demand 13.07.2004	Date of completion of this report 04.04.2005
Name and mailing address of the international preliminary examining authority:  European Patent Office - P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk - Pays Bas Tel. +31 70 340 - 2040 Tx: 31 651 epo nl Fax: +31 70 340 - 3016	Authorized Officer Droghetti, A Telephone No. +31 70 340-4143 

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. **PCT/EP 03/14650**

I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

Description, Pages

1-35 as originally filed

Claims, Numbers

1-14 received on 13.07.2004 with letter of 09.07.2004

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).
3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:
- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
- ☐ the claims, Nos.:
- ☐ the drawings, sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

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**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability;
citations and explanations supporting such statement**

1. Statement

Novelty (N)	Yes: Claims	1-14
	No: Claims	
Inventive step (IS)	Yes: Claims	1-11,13,14
	No: Claims	12
Industrial applicability (IA)	Yes: Claims	1-14
	No: Claims	

2. Citations and explanations

see separate sheet

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Re Item V

Reference is made to the following documents:

D1: JP A 9291114
D2: EP A 0177961 (cited by the applicant)
D3: EP A 1260545
D4: US A 4138520

1. Novelty (Art. 33(2) PCT)

The subject-matter of claims 1-14 in view of D1-D4 is novel for the following reasons.

1.1. D1 describes a polymer composition for sheets and fibers comprising a propylene polymer having melt index and a percentage of β -crystallite higher than 10 wt-% (see search report). Neither nucleating agent, comonomer amount, crystallization temperature nor the use for preparing pipes are mentioned in D1.

Thus the subject-matter of claims 1-14 is novel in view of D1.

1.2. D2 and D3 describe polymers composition comprising a propylene polymer (homo- or copolymers) having melt index in a comparable range and the same nucleating agent in the same amounts (see search report).

A range of articles (e.g. pipes in D3) having improved impact and stiffness properties are prepared thereof (see search report). However the propylene polymer is characterised by a predominant percentage of β -crystallites (e.g. more than 50 wt-%).

Thus claims 1-14 are novel in view of D2 and D3.

1.3. D4 relates to film from similar propylene compositions having a low amount of β -type crystallites as claimed (see k value in D4 and search report). The MFR in the examples is higher and is not explicitly cited in the rest of D4.

Thus the subject-matter of claims 1-14 is novel in view of D4.

2. Inventive Step (Art. 33(3) PCT)

2.1. In view of the explanations provided by the applicant with letter dated 25.01.2005, the subject-matter of claims 1-11, 13, 14 is regarded as inventive for the following reasons.

D2 and D3, which are considered as the closest prior art, discloses a polymer composition comprising a

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propylene polymer (homo- or copolymers) having melt index as claimed and the same nucleating agent in the same amounts (see search report). The propylene polymer is characterised by a predominant percentage of β -crystallites (e.g. more than 50 wt-%) and a range of articles (e.g. pipes in D3) having improved impact and stiffness properties are prepared thereof (see search report).

The present application differs from D2 (or D3) in that the propylene polymer comprises a lower amount of β -crystallites (2-8 wt-%).

As explained by the applicant in letter dated 25.01.2005 (see the comparative examples 45-48) and according to the examples on file, the use of beta-crystallites in the amount above leads to compositions having good mechanical and surface properties (impact resistance and smooth surface) and, when processed in particular as pipes, an improved dimensional stability over the compositions in D3.

The problem to be solved by the present invention may therefore be regarded as the preparation of an propylene polymer composition and pipes thereof having not only good mechanical properties but also improved dimensional stability.

The solution proposed in claims 1-11,13,14 of the present application is considered as involving an inventive step (Article 33(3) PCT) for the following reasons.

The use of propylene polymers presenting a certain amount of β -crystallites in order to obtain blends with good impact and stiffness properties is well known in the art (see D1,D2 and D3).

However no hint can be found in the prior art to use an amount of beta-crystallites as claimed in order to improve the dimensional stability of propylene compositions and in particular with regard to the manufacturing of pipes (see D1-D3).

In D4 polypropylene with low content of the beta crystallites in similar propylene polymers is described, but no reference to the dimensional properties of the polymer composition is done and no pipes are prepared thereof (D4 relates only to films).

Thus the subject-matter of claims 1-11,13,14 is inventive in view of D1-D4.

2.2. However claim 12 still remain not inventive in view of D2-D4. The reasons as follows.

The explanations provided by the applicant relates only to the properties of pipes (see the improvement of the dimensional stability) comprising the composition according to the invention.

No reference is made to the specific properties of films, fibers and molding comprising the composition according to the invention.

Furthermore no examples on file illustrate the effect or the advantages deriving from the use of the distinguishing feature above in films, fibers and moldings compositions over the prior art.

In the description it is only said in general that the small amount of β -crystallites in the polymer affects the impact and stiffness properties of the polymer.

However the use of propylene polymers presenting a certain amount of β -crystallites in order to obtain blends

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for films, fiber and moldings with good impact and stiffness properties is well known in the art (see D2,D3 and D4).

Therefore the use of a composition according to the invention for preparing films, fibers and moldings can only be regarded as inventive, if the polymer blend having the claimed β -crystallites amount presents unexpected effects or properties in relation to the compositions for films, fibers and moldings comprising a similar or a higher amount of β -crystallites in the prior art. However, no such effects or properties are indicated in the application.

Hence, no inventive step is present in the subject-matter of claim 12.

4. The subject-matter of claims 1-14 meets the requirements of Article 33(4) PCT, with regard to industrial applicability.